



Space weather effects on Solid State detectors on low altitude polar orbiting satellites

Linn-Kristine Glesnes Ødegaard, Marit Sandanger, Finn Søråas, Hilde Nesse Tyssøy, and Johan Stadsnes
Birkeland Centre for Space Physics, Department of Physics and Technology, University of Bergen, Bergen, Norway

We investigate the degradation of the Medium Energy Proton and Electron Detector (MEPED) on board the Polar Orbiting Environmental Satellites (POES) with respect to isolated events that severely accelerate the detector degradation. It is known that the proton detectors of the MEPED instrument are subjected over time to radiation damage. This is manifested with an increase in the energy thresholds of the detectors due to a thicker dead layer at the front of the detector as well as damage to the silicon lattice within the detector leading to reduced charge collection. By comparing energy spectra of old and recently launched POES the changes in the energy levels of the detectors can be monitored. Our preliminary analyses indicates that, on top of the gradually increase in the energy levels, there are rapid changes in these levels during SEP (Solar Energetic Particle) events and geomagnetic storms. These single events thus accelerate the degradation of the detectors, and can give information on Space Weather effects on satellite instrumentation.